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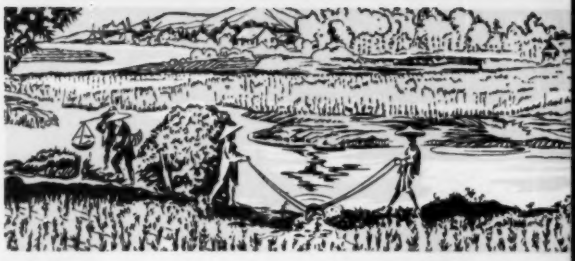

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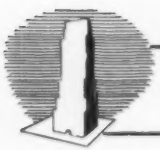

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Dr. Hoffman is Associate Professor of Geography at the University of Texas. He is author of many scholarly articles, editor of *A Geography of Europe*, and together with Mrs. Hoffman, of a children's book on *Switzerland*. His article "The Shatter-Belt in Relation to the East-West Conflict," which appeared in October, 1952, received the JOURNAL OF GEOGRAPHY prize.

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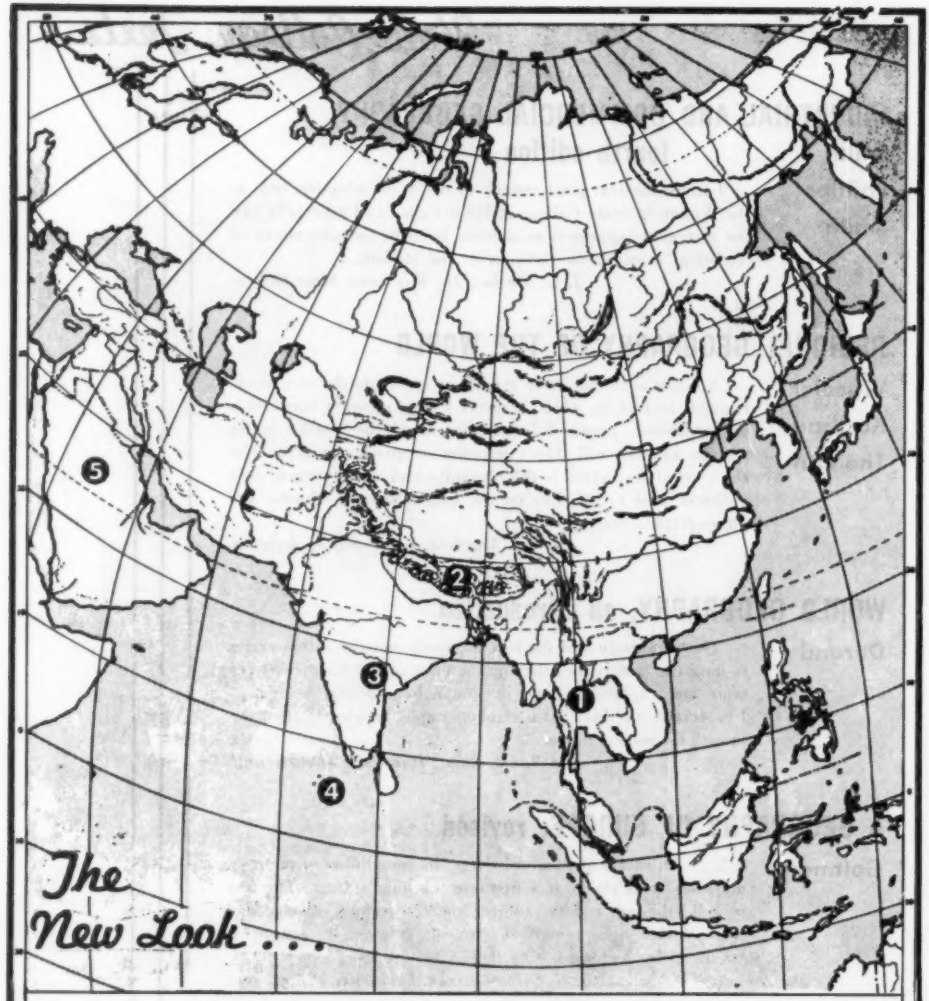

CURRENT CHANGES IN ASIA

1. Name Siam changed again to Thailand.
2. Elevation of Mt. Everest changed to 29,028 feet.
3. French coastal posts of Mahe, Yanaon, Pondicherry and Karikal returned to India.
4. Maldive Islands became a republic, independent of Ceylon.
5. Railroad from Dammum to Riyadh completed.

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TOWARD GREATER INTEGRATION IN EUROPE: TRANSFER OF ELECTRIC POWER ACROSS INTERNATIONAL BOUNDARIES*

GEORGE W. HOFFMAN
The University of Texas

As a result of Europe's war devastation, and from lessons learned thru American post-war economic aid, some new ideas have resulted which contribute toward closer integration and unity of free and non-communist Europe. Schemes such as the European Coal and Steel Community, the Organization for European Economic Corporation (OEEC), the Council of Europe, the North Atlantic Treaty Organization (NATO), the Economic Commission of Europe of the United Nations and other similar organizations blossomed and spread thruout free Europe. (See Map I.) Because of the apparent move toward European integration, the Soviet Union organized the Council for Mutual Economic Assistance for the region under its control, and more recently the Treaty of Friendship, Cooperation and Mutual assistance as a counterpart of NATO. These two Europes, economically counterbalancing one another, face each other and advance slowly toward greater integration, while at the same time they tend further and further apart economically as well as politically.

Of all the organizations contributing toward greater European integration none exerted itself stronger than the Economic Commission of Europe under the United Nations and its various committees. The Committee on Electric Power supplemented by such organizations as the World Power Conference, the International Union of Producers and Distributors of Electric Power (UNIPEDE), the International Conference of Large Electric Systems (CIGRE), the Union for the Coordination of the Production and Transmission of Electricity, the International Conference for Liaison between Electric Power Producers (CILPE) and the Com-

* Presented at Indianapolis meeting of the National Council of Geography Teachers, November 25, 1955.

Map 1

mission of Energy of the OEEC took the lead since shortly after the war; first, in rebuilding power production, later in advancing technological knowledge and lately in studying electric energy problems of individual countries in connection with greater international cooperation.[1] All these organizations are now giving increased at-

[1] Several studies have been published by the Economic Commission of Europe, Committee on Electric Power, *Possibilities for Electric Power Exchanges between Austria, Czechoslovakia, Germany and Poland*, ECE/EP/23 and Add. 1, Geneva, August 1950; *Prospects of Exporting Electric Power from Yugoslavia*. E/ECE/192 and

tention to the problem of nuclear energy, of such importance to "power hungry" Europe.

The existence of so many international organizations, with representatives from both West and East, all concerned with the future of electric power production, is really not so surprising when we realize that our civilization after all is based on the production of cheap and abundant power. Better living conditions in both well-developed industrial countries and in under-developed countries abroad can only result from increased use of power. In addition, the annual output of coal is rapidly becoming insufficient to satisfy the rising demand for electric power[2] and sites for generating stations and storage basins producing inexpensive hydropower are greatly limited by terrain and climate.

It therefore becomes an absolute necessity for the progressive economic development of Europe to find new sources of energy[3] and at the same time facilitate a more even balance of power production (between thermal and hydro supply) within both the national and international level. The latter goal, indicated in the emphasis on the transfer of electric power across international boundaries is the main subject of this paper.[4]

General Considerations

Before analyzing the prospects for future developments with regard to a balanced electrical power production it will be necessary to present some basic facts.[5]

First of all, it has been pointed out repeatedly that there exists a correlation between the standard of living, expressed in terms of national income per head of population, and energy supplied per

E/ECE/EP/154, Geneva, January, 1955; *Brief Account of "Interalpen" Activities During 1954*, EP/77, Geneva, February, 1955; *Transfer of Electric Power Across European Frontiers*, E/ECE/EP/126, Geneva, August, 1952 and several other studies.

[2] During 1954 Western Europe was forced to cover its coal deficit of more than 50 million tons by relatively expensive imports from the United States.

[3] Walker L. Cisler, "The Role which Nuclear Energy can play as an Energy Source in the next 25 to 50 years." *International Conference on the Peaceful Uses of Atomic Energy*, Geneva, August 8-20, 1955, p. 13 (Private Printing).

Sir John Crockcroft, "The Industrial Application of Atomic Energy." *Progress*, Vol. XLIV, No. 245, (Winter 1954-55), p. 99.

[4] Transfer of Electric Power. *op. cit.* and Louis Armand. *Some Aspects of the European Energy Problem*. OEEC, Paris, June, 1955.

[5] For a general discussion see Erich W. Zimmerman, *World Resources and Industries*, rev. ed. Harper & Brothers, New York, 1951, p. 568.

head. And while energy naturally is not the only factor, it does show that greater energy consumption, higher individual income and a greater level of productivity are closely related.

Second, there exists today competition among the main sources of energy; coal, petroleum, water power, and especially in the United States and Canada, natural gas. The position of nuclear energy will in future years increase this competition and according to several recent studies the "problem will then be to extract the maximum kilowatts from a given amount of investment in power supply schemes, keeping in mind their respective running costs and the advantages inherent in the various generating techniques."[6]

Third, European industrial production is largely based on an abundant cheap supply of coal—80 percent of the total energy needs of Western Europe in 1953 and still an estimated 70 per cent by 1965[7]—while at present hydropower supplies less than five per cent and natural gas less than one per cent. The world as a whole is receiving six per cent of its total energy and two-fifths of its electric energy from hydroelectric plants. But of major importance to European industrial production is the fact that according to serious estimates[8] countries such as Austria, Denmark, Italy and Portugal will have used all their high grade coal supplies before 1980 (about 90 per cent of all thermal electric power is at the present time generated from bituminous coal).[9]

Fourth, it has been stated that exploitation of hydroelectric power in Europe will have reached its maximum in West Germany by 1962, Ireland 1963, Sweden and Denmark by 1964, Switzerland 1965, France 1968, Spain 1972, and in Italy by 1975. With the exception of Greece, Turkey and Yugoslavia all other countries will have reached their limit in thirty years or less.[10]

[6] "Economics of Nuclear Power." *Research and Engineering*, Vol. I, 3, Section 1 (October-November 1955), p. 22 and Armand, *op. cit.*, p. 14.

[7] J. A. van den Heuval, "Future Development of Energy Needs in Western Europe." paper read before World Petroleum Congress, 1955 as reported in *Neue Zuericher Zeitung*, September 10, 1955, p. 10.

[8] Harry I. Miller and F. Douglas Campbell, "Economic Aspects of Electric Power Production in Selected Countries." *International Cooperation Administration*, July, 1955. (Private Printing and distribution.)

[9] Nearly one-fifth of all solid fuels produced in OEEC countries are used to generate thermal power; whose rate of production is increasing far more rapidly than that of coal. Between 1947 and 1952 the increased production of thermal power has cost Europe about 30 million tons of coal yearly.

[10] Miller and Campbell, *op. cit.*, p. 14.

Fifth, unfortunately the hydroelectric potential is very unevenly distributed and is relatively small in most highly industrialized countries of Western Europe. The greatest potential for the next 20 to 30 years is available in Norway, Austria and Yugoslavia. The table shows an interesting comparative picture:

Country	Potential Output (Unit: 10^9kwh)	Sources Already Exploited (Per Cent of Total Resources)
Norway	104,500	17
Yugoslavia	50,000	2
Austria	30,000	17
By Comparison:		
France	59,800	27
United Kingdom	9,400	20
Switzerland	27,000	38

Source: Louis Armand, *Some Aspects of the European Energy Problem*, OEEC, Paris, 1955, p. 42.

Sixth, the cost of producing electric energy varies greatly and depends upon the location of the generating station, the way in which water has been harnessed—seasonal storage basin, daily or weekly storage plants or run-off stream, and the type of supplies used by thermal plants such as fed by the blast furnace gas from steelworks or steam raised by individual industries for their own use, those burning low-grade fuel or fuel difficult to store or those burning high-grade coals (less than 30 per cent ash and a minimum calorific value of 4,500-5,000 calories per kilogram).

From these summarized facts it is clear that the main resources of energy available in most European countries are running low and the cost of producing electric energy is likely to increase during the next ten to twenty years. If European countries are to remain competitive in the world markets until nuclear energy can provide abundant and cheaper electric power, the development of reserves of national gas and possible speed-up in search for petroleum, together with closer international cooperation among the European countries becomes a matter of life and death.

Future Developments

Every European country, at the present time, is concerned mainly with securing its electric energy needs from its own gen-

erating plants and imports or exports only if absolutely necessary. This national balance of energy is expressed in the low exportation of electric power—only 1.5 per cent of the total electric power production was transferred across European frontiers in 1953—2.5 per cent for the nine OEEC countries. Austria easily holds a dominant role with over 13 per cent of its electric production being exported, largely to Western Germany.

In spite of the low percentage of total exports of electric power, the number of inter-regional arrangements is constantly increasing —largely by agreement between individual private companies—and assuming a greater contribution in the over-all European power picture. Countries such as Switzerland helped to finance the building of a French thermal power plant (Dieppedalle) in return for winter power; Austria's western provinces supply the Ruhr with power on a guaranteed plan in return for coal; an International Study Group comprising Austria, Italy, France and Western Germany agreed on a plan to develop cheap hydro-electric power in the Tyrol with deliveries to these countries;[11] Spain, with U. S. dollars obtained from the air-base program, built connections with France; Italy recently exported 100 million kilowatts of power to Western Germany with the assistance of the Austrian transmission network. The result of a study on future development of hydro and thermal power in Yugoslavia and its possible impact on the European electric power picture[12] clearly shows the great possibilities transfer of electric power across European frontiers might have in years to come.

Even tho several European countries at the present time produce all their electric power needs, greater international cooperation will easily provide added supplies and a better balance within individual countries. Self-sufficiency very often impairs the maximum exploitation of natural resources. This becomes especially clear when it is pointed out that regions with the greatest concentration of industries are usually also the regions with the greatest deficiencies in easily obtainable cheap electric power. A few examples may suffice to explain this serious defect in the distribution of electric power even in those countries which still have sample

[11] The lastest reports are published by the Electric Power Committee of ECE under EP/77, Geneva, February 24, 1955 and in many technical and popular journals under "Interalpen Project."

[12] *Prospects of Exporting Power from Yugoslavia, op. cit.*

reserves of cheap water and coal supplies: the greatest industrial concentration and consumption of electric energy in France is to be found in its northern regions, but the distance to the greatest hydroelectric production and at the same time the region of lowest consumption is more than 500 km, a distance still too great for maximum peak supply;[13] Austria's largest industrial concentrations are in the eastern part of the country, while its western provinces have the greatest water resources with the lowest rate of consumption. The country therefore could benefit from importing electric energy both from the thermal plants in Silesia and the hydroelectric plants to be developed in northern Yugoslavia, while at the same time exporting from its western provinces to power hungry northern France and Western Germany;[14] Norway among the countries with the greatest hydro resources potential at the moment does not export at all. Bavaria in great need of cheap power could obtain thermal power from Poland and Czechoslovakia, but no agreements have been concluded thus far.[15]

The future development therefore becomes clear. Greater international cooperation in "guaranteed supplies," and exchanges will lead to the development of international instead of narrowing national power interests. Needs for such a development, in addition to the cooperative attitude of all European countries, are international agencies willing to finance the building of power plants serving international instead of national interests. A beginning already has been made by the International Bank for Reconstruction and Development, which gave a loan to Austria to help finance the Reisseck-Kreuzeck hydroelectric power plant in southern Austria, on condition that a certain percentage of its output would be guaranteed to Italy. Several other projects in Austria and Yugoslavia are now under consideration.

The energy balance needed for the planning of future projects

[13] Alice F. A. Mutton, "Hydro-Electric Power in Western Europe." *Geographical Journal*, Vol. CXVII, 3 (1951), p. 328 and George Kish, "Hydroelectric Power in France." *The Geographical Review*, Vol. XLV, 1 (1955), p. 81.

[14] Federal Ministry of Transport and Nationalized Enterprises, *Austria's Hydropower Resources and Their Utilization for European Power Supply*, 2nd English Ed., Vienna, 1955 and O. Vas, "Die Bedentung der Osterreichischen Wasserkräfte für Mitteleuropa." *Wasser und Energiewirtschaft*, Zurich, No. 7, (1953), special printing, p. 11.

[15] United Nations, Economic Commission on Europe, Electric Power Section, *Possibilities for Electric Power Exchanges Between Austria, Czechoslovakia, Germany and Poland*. UN/EP 23 and Add. 1, Geneva, 1950.

in Europe should be based on equality between supply and demand on a European basis and not locally within each individual country. The contributions to this over-all balance of hydro and thermal power must be based on regional levels so as to insure the most economical operation of the whole system. Projects must be selected without regard to boundaries and according to a recent UN report should ideally be based on the following criteria:[16] (a) thermal power stations consuming lignite and low-grade fuels of small market value and (b) hydro-electric stations based on the use of water resources of comparatively low cost. A unified policy for peak load demands based on interconnecting operational facilities is therefore essential.[17] This policy is followed with great success by several power companies in the United States.[18]

As a result of such a policy the need for transmitting electric energy across European frontiers to the important centers of consumption becomes self-evident. The question of voltage, direction and length of the transmission lines and the whole structure of the European grid is being given increased attention and will greatly contribute to the most efficient use of electric power.[19] Obviously, the pattern of consumption and the geographical distribution patterns of the centers of production will determine the amount and the direction of energy to be moved over Europe in the years to come.

As sites for low cost power plants become scarce and the production of electric power increases, new ways must be found for supplying the European consumer with cheap power. The recent study by Armand, considering the disadvantages of long distance transmission cables, gives serious attention to the possibility of creating "European industrial zones" with industries using large amounts of electricity located near power stations, e.g. electro-metallurgy, electro-chemical industries, aluminum, etc.[20] These

[16] Transfer of Electric Power, *op. cit.*

[17] Zimmermann, *op. cit.*, pp. 604, 607.

[18] OEEC, *Interconnected Power Systems in the United States and Western Europe*. Tecaid Mission and Electricity Committee, Paris, 1950.

[19] United Nations, Economic Commission for Europe, Electric Power Section, *Some Technical Aspects of the Transmission of Electric Power*, I/ECE/EP/128, Geneva, 1952 and Armand, *op. cit.*, p. 23. In some cases for example, it is more economical to transfer energy in from of coal than in electric power.

[20] Armand, *op. cit.*, pp. 41, 47. Aluminum, for example, is easier to transport than electricity and consumes large amounts of electricity.

zones should be comparable to a "free zone" with respect to deliveries of raw materials and the dispatching of finished products located close to the sources of generating facilities. And while it is well realized that some of these plans will still take years to materialize, it is at least a satisfaction, that responsible leaders in various European countries are taking the initiative in joint planning for international cooperation. The latest report of the Electric Power Section of the UN mentions the fact, not without satisfaction, that no blocks have been created in the last year to hinder the free exchange of electric power across European frontiers, and that boundaries were opened and discussions held on a number of projects all concerned with creating an international electric power balance.[21] Recent agreements, small in quantity, between Austria and Czechoslovakia, and Yugoslavia and Italy, are hopeful signs for the future. The transfer of electric power across boundaries, the erection of power plants of service to international instead of national interests only and possible technical developments, especially in transmitting the abundant hydro resources of Norway to Denmark and northern Germany by way of a submarine cable, are hopeful signs for the future integration of the European economy.

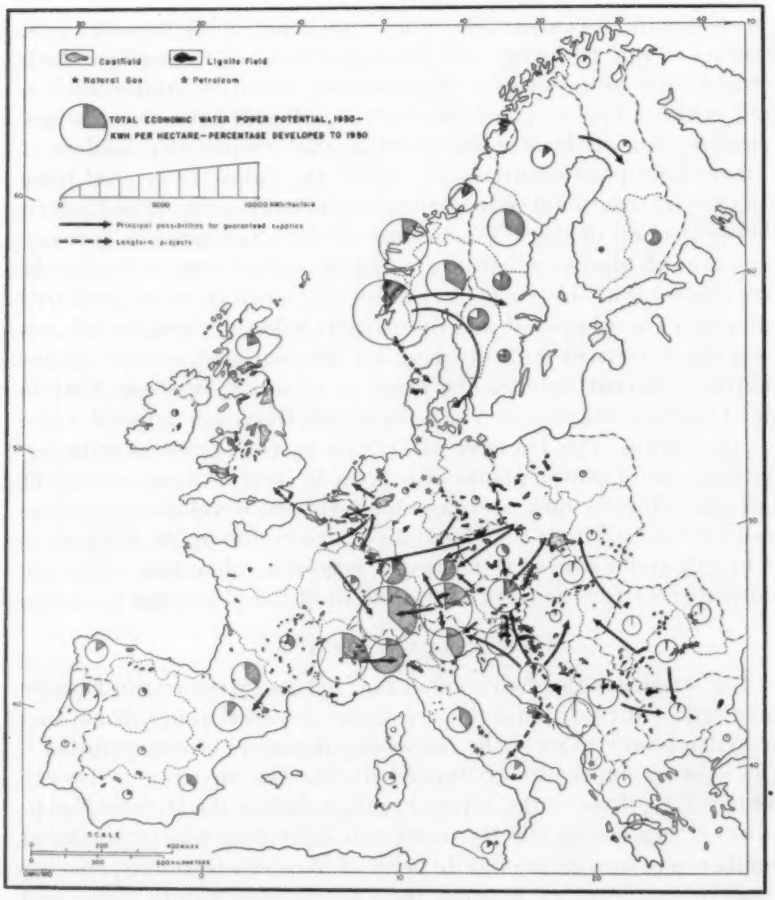
CONCLUSIONS AND OUTLOOK

The study has clearly revealed that not many regions in Europe have sufficient traditional sources of energy, such as low grade fuel or hydro-power to meet the increasing demands of consumption.[22] The sources which can be tapped during the next ten to twenty years will be those of the Alpine areas, including the Dinaric Mountains of Yugoslavia, the Pyrenees and individual widely scattered lignite areas such as the lignite fields of Western Germany, smaller areas in southeastern Austria, the Polish-Czech lignite mines and considerable lignite resources in central Yugoslavia. (See Map II.)

During these years transmitting generated energy to the big consuming centers must be expanded. Perhaps integrating the

[21] United Nations, Economic and Social Council, Economic Commission for Europe, "Report of the Committee on Electric Power," E/ECE/195, Geneva, January 31, 1955.

[22] See also the very valuable study by Palmer C. Putnam, *Energy in the Future*. D. Van Nostrand, New York, 1953. Longterm studies come to the conclusion that the demand for electric power will double every ten years (equal to a growth of 7.2% per year) with the ratio of hydroelectric production to the total power production remaining largely unchanged.



Map 2

British thermal system with that of the continent and the Scandinavian hydro-system can be accomplished, providing, naturally, that such a step proves economically sound. It is during the period 1970-80, when the economic, available water power of the Alps has been fully exploited and when the important cheap coal resources have been exhausted that the use of nuclear energy for power will become of decisive character for the future power production of Europe.

The costs of hydro and thermal power production will be the determining factor in the desirability of nuclear energy. These costs are at the present time especially high in Turkey, Italy and France,[23] but with the costs of nuclear energy becoming lower during the next 15-20 years, costs will meet.[24] The use of nuclear energy also would have the advantage that there would be little difference in costs, whether operated part time or full time, or whether the loads were light or heavy. With the volume and weight of nuclear fuel very small the cost of fuel transportation would also be negligible. Rising expenses of labor and raw materials will determine in the future the type of energy production preferred.

Looking ahead a new relationship must be developed in the energy production of Europe. Increased international cooperation will become an absolute necessity if the price of power is kept at the present level. Transfer of power from those areas which can produce hydro and thermal power at low cost will greatly ease the problem for those regions which are dependent upon higher cost power and in which local shortages still play an important role. At a later stage the production of hydro and conventional thermal power will have to compete with that of nuclear power, and other sources of power such as wind, sunrays, difference of water temperature, a situation similar to the competition between different modes of transportation.

For Europe then a new pattern of energy consumption will emerge: "nuclear energy and water resources will provide most of the heat and power for industries, commercial and domestic consumers, while coal is turned into coke for smelting and into coal-tar, from which we shall need to extract countless plastics and chemicals, as well as the liquid fuels to replace oil products."[25]

All these problems raised in this brief paper must be studied during the next twenty-five years within each individual country, but international action will be necessary if national schemes are

[23] Miller and Campbell, *op. cit.*, p. 25. In Turkey total estimated costs of production at the 1953 rate of consumption and with equipment available at that time was found to be 20.6 mills per killowatt hour for thermal power and 18.6 for hydropower. The same figures are for Italy 17.0 for thermal and 16.0 for hydropower and for France 13.6 for thermal and 14.0 for hydropower. In comparison for Austria the costs are 11.0 for thermal and 8.5 for hydropower.

[24] Walker L. Cisler, *op. cit.*

[25] John Gray, "Power and Water," in Survey of World Resources, S. Zuckerman, ed. *Progress*, Vol. XIVL, No. 247, (Summer 1955), p. 228.

more effective in increasing consumption of electric power and in this way raising the standard of living among all the people. The transfer of electric power across European frontiers is truly one of the most important steps toward greater integration and unity in Europe.

A TOURIST-GEOGRAPHER VISITS IQUITOS, PERU

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Not many tourists visit Iquitos, Peru, but I did and liked it. Perhaps not many even know about Amazonia's third largest city, ranking after Brazil's Belém and Manaus. To the average tourist Peru means the capital city, Lima, with possibly a trip on that engineering masterpiece the Central Railway to visit Huancayo and its mile-long Indian market. Peru also means Cuzco and the Inca ruins at Machu Picchu. The more thoro tourist may include the colonial city of Trujillo, the ruins of Chan Chan, and a nearby sugar hacienda. He may fly to the "white city," Arequipa, with its buildings of carved volcanic *sillar* and symmetrical El Misti. He thus comes to know Peru's almost rainless coastal desert and the towering Andes. He sees Twentieth Century modernity and pre-Inca and Inca antiquity. He meets descendents of the Incas and of their conquerors. He talks to foreign business men and recent refugees from Europe. But he ignores the approximately fifty per cent of Peru which lies east of the Andes. He does not touch Peru's "world of tomorrow," Amazonia, or its "principal Atlantic port," Iquitos.

Location and Access

Iquitos is a city of an estimated sixty to seventy thousand persons located less than four degrees south of the equator. It is only a little more than four hundred feet above sea level on low bluffs overlooking the Marañon, as the Amazon is here called. Altho Iquitos is over twenty-three hundred miles upstream from the mouth of the Amazon, or a distance approximately equal to that

from New York City to Helena, Montana, the river is sufficiently deep for the city to serve as the upstream port for infrequent ocean freighters as well as a regular port of call for river boats. It functions as a busy distributing, collecting, and to a lesser extent, processing center for sparsely populated eastern Peru.

Isn't Iquitos, nevertheless, too difficult of access for the average tourist? Until recently the answer had to be yes. To reach Iquitos from Lima by the shortest route meant travelling laboriously over Andean trails to the navigable headwaters of the Marañon or its tributaries and then completing the journey by river boat. Actually it was considered less arduous to sail from Callao thru the Panama Canal to the mouth of the Amazon and then up the river, often on a far from luxurious river boat. Now there is the Central Highway from Lima to Pucallpa to connect with downstream river boats; or one may still approach via Brazil and the Amazon. But for many persons these land and water approaches to Iquitos are still too slow and too difficult.

Today the airplane, as elsewhere in South America, has changed the picture. Twice-weekly, non-stop flights are regularly scheduled by Faucett Airlines between Lima and Iquitos, connecting the two cities in three and a half hours. En route there is a magnificent view of snow-capped Andean peaks and western Amazonia with its green jungle, meandering rivers, and ox-bow lakes. Or one may enter Peru via the less luxurious but perfectly comfortable weekly amphibious flight of Panair do Brasil from Manaus to Iquitos. These flights to Iquitos are actually of sufficient interest and importance to be listed in the Pan American World Airways timetable. In this Air Age difficulty of access can no longer be an excuse for ignoring Iquitos.

The City and Environs

To visit Iquitos is to see a bit of Amazonia in comfort. This has no appeal perhaps to the explorer or adventurer, but for the average tourist, especially one from the United States, comfort is important. There is a completely modern hotel, one of the chain of excellent government tourist hotels to be found in Cuzco, Trujillo, Arequipa, and other Peruvian cities. It is true that the weather is likely to be hot and humid, but anyone who has lived thru a summer heat-wave in the United States will be pleasantly surprised by the absence of our excessively high temperatures. And if it does rain,

the sun will soon be out. He won't remain long enough to be oppressed by the monotony of the climate. Nor need he worry about malaria or yellow fever in Iquitos, a clean city where insect control seems to have been very successful.

Iquitos is not a ghost town left from the rubber boom of fifty years ago, but an active city. True the pace is slower than in our cities, and the siesta is popular, but the people seem to be working and planning for the future, not living on past glory. If one thinks of Iquitos in its Amazonian setting, it becomes a truly remarkable city.

The city itself is Spanish in style. Most of the buildings are one or at most two stories high, of brick or concrete, many with tile roofs. Some of the older buildings are faced with colorful tile brought from Portugal as ballast during the rubber boom. The city follows the river, but is basically laid out in rectangular blocks, with wide, straight, and unfortunately, mostly unpaved streets—dusty when dry and muddy when wet. As in other South American cities there are many plazas with monuments of national heroes or commemorating important events. From the Malecón, the waterfront drive and promenade, one can look across the wide expanse of water or study the types of river craft floating past.

One of the most interesting places in Iquitos is the port with its floating dock and river boats tied up for unloading and loading. Stacks of wood piled on the lower deck of the river boats quickly answer the question as to their source of power. A steam winch is used to haul freight up the bank in small carts on portable tracks. Sections of track can be added or removed as the river falls and rises. Work on new port facilities was resumed in 1955 after several months delay because of financial difficulties. No estimate was given as to when these facilities might go into use.

The shops carry familiar products, but as a geographer I was startled to see paper napkins with a snowman motif so near the equator, and in May. Impressive and somehow symbolic to me of what is happening in Iquitos and Amazonia was a large window-display of Replogle globes.

Adjacent to Iquitos is the picturesque "suburb" of Belén. By contrast with the sturdy buildings of Iquitos, Belén is built primarily of balsa wood and is more in line with the architecture expected in Amazonia. Much of the produce sold or bartered in Belén or Iquitos floats there on balsa rafts, so there is a plentiful supply of building material.

Belén hugs the shore and spreads out onto the river. Except for those buildings on the sides of the bluff, the homes stand on piles or float on balsa rafts, adaptation to the shifting height of the river. Perhaps a chicken or two will share a raft with a family. Local transportation is by small boat, usually dugout canoe. The canoes of Amazonia are especially intriguing, not only because they are dugouts but because a single occupant will paddle from the front. To sit alone in back means to go in circles. Most of the paddles are round, and some will be gayly decorated.

The fresh produce for sale in Iquitos or Belén reflects the tropi-

FIG. 1. Rosewood logs and Fabricas Punchana S.A., factory for distillation of rosewood oil.

cal location: palm fruits, bananas, oranges, yuca roots (the Peruvian name for manioc), papaya, and many others both familiar and unfamiliar to the North American. Banana leaves may serve as wrapping paper. Purchases will be carried home in a basket.

The vegetation near Iquitos is not as tall and dense as that associated with virgin rainforest. The more accessible trees have been cut over the years for fuel and other uses of wood. They have been replaced by lower but nevertheless lush growth. For the photography-minded, the Amazon is muddy but picturesque, and the nearby black-water tributary, the Nanay, serves as an excellent reflector of green vegetation, blue sky, and white clouds.

Economic Development

Why modern Iquitos at all? Why is it no longer a ghost town from the failure of the rubber boom? Why any city in a region called Green Hell perhaps more often than Eldorado? The answer is that Iquitos is engaged in a long-range program of development with the belief that there can be a future, as well as a past, in the Peruvian jungle. Thus Iquitos has become a city with diversified industries. Granted they are small, but it is important to consider what they mean to the region rather than judge them in the total world picture.

Who can fail to be interested in the potentialities of such a sparsely populated region in an era of concern over exhausted

Fig. 2. Barbasco roots.

resources and surplus population? Today rubber has been replaced in the economy of Iquitos by such varied items as rosewood oil, barbasco roots for rotenone, wild animals and birds, as well as petroleum from the Ganso Azul well near Pucallpa.

Many of the Amazonian products shipped thru Iquitos, with or without processing, are en route to the United States. Altho one of the newest, the number one industry by May, 1955, was the distillation of *palo rosa* or rosewood oil, a fixative for our perfumes. Even lumber mills were abandoning their normal activity

in order to share in the boom market. It is to be hoped overproduction does not burst the prosperity bubble.

As with all Amazonian vegetation, there are no large stands of rosewood trees. The Indians must locate single specimens scattered among tens if not hundreds of other species in the rainforest. But a single tree may bring more money than an Indian can get from all his garden produce sold in the market, so he is tempted to shift from food production to rosewood hunting. Planting seedlings never occurs to him. The result will be doubly unfortunate if this continues: accessible rosewood will become scarce, and the cost of food will increase as the supply diminishes.

The *palo rosa* factories are small and simple. They can be identified by the piles of rosewood logs outside the building in which chips of the wood are subjected to steam distillation. The fuel for the stills is the dried waste from previous operations.

The handling of barbasco roots, second in importance in the spring of 1955, should be of special interest to gardeners. Peru supplies most of the world's barbasco, the chief source of rotenone, an insecticide, and most of the barbasco moves thru Iquitos, either for grinding into powder before export or for direct shipment.

Unlike rosewood which is still gathered wild, the barbasco vine has come to be cultivated, tho in rather careless manner. It is the root which supplies the rotenone. These are dried before being baled for shipment to Iquitos. Long before they became a source of insecticide, grated barbasco roots were used by Amazonian Indians as fish poison. Sprinkled on the river the poison stupifies the fish which are then easily caught. Fortunately these fish are safe to eat, for altho rotenone is poisonous to cold-blooded creatures, it is relatively harmless to warm-blooded animals.

Ranking third in value to Iquitos is the lumber industry. Amazonia is famous for its hardwoods, but most of the lumber mills are small and the resources have been little utilized. I saw modern-style wood furniture which I was told had been flown to Iquitos from Europe; this, in spite of the fact that the Astoria mill, one of the most modern in Amazonia, is located near Iquitos at the junction of the Nanay and the Amazon. It specializes in cedar and mahogany. However, the very fact that the Astoria mill has been erected shows the new trend in Iquitos. And I did see a freighter from Liverpool anchored off the mill to load mahogany.

As such development spreads in and around Iquitos, Amazonia

of legend and explorers' tales retreats. The visitor is not likely to see much wild animal or bird life unless he spends a night or longer on an "expedition" into the jungle. But curiosity can be satisfied for the less venturesome by collections of jungle life awaiting shipment to animal and bird dealers, zoos, or medical laboratories: monkeys, snakes, colorful birds, and even jaguar kittens. In addition there is an aquarium where he may see the ravenous, flesh-tearing piranhas in safety, or view the types of delicious fish he has been served at the hotel.

Conclusions

Iquitos will not impress those visitors who crave artificial excitement: nightclubs, casinos, or fancy stores. It does have much of interest, however, for those who have the imagination to find excitement in seeing the first stages in what Peru hopes at last will become permanent development of Amazonia. It is too early to forecast probable success or failure of this most recent attempt to utilize the resources of one of the world's large geographic regions, but I am glad that I saw Iquitos in 1955 when activity was great and optimism for the future was high. The problems of development of Amazonia are still major ones and far from solved, but Iquitos is not being intimidated by what we consider its environmental handicaps. It is to be hoped that the city can and will continue to lead the way in the development of Peru's "world of tomorrow."

POPULATION DISTRIBUTION AND TRENDS IN NORTH CAROLINA

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Distribution and Density

With a total population of over four million, North Carolina ranks tenth in the nation and first in the Southeast. Based on the number of people per square mile it is the most densely populated state south of the Potomac River except Virginia, the latter owing its slightly greater density to an overflow of people from the nation's Capitol. An overall density of 82.7 per square mile, nearly

twice the national average, gives the state a density rank of fifteen among the forty-eight states.[1]

The population is far from being evenly distributed over the state. Thirty-three of the one hundred counties have less than fifty people per square mile (Fig. 1), or well below the state average. The density ranges from 10 people per square mile in one tidewater county to 363 in an industrial, Piedmont county. In general, the heaviest population is in the Piedmont, where 42 counties, comprising 40 per cent of the land in the state, contain 55.5 per cent of the people. As a rule, the most sparsely settled areas are in the mountainous west and lowland east. Taking the three regions of the state,

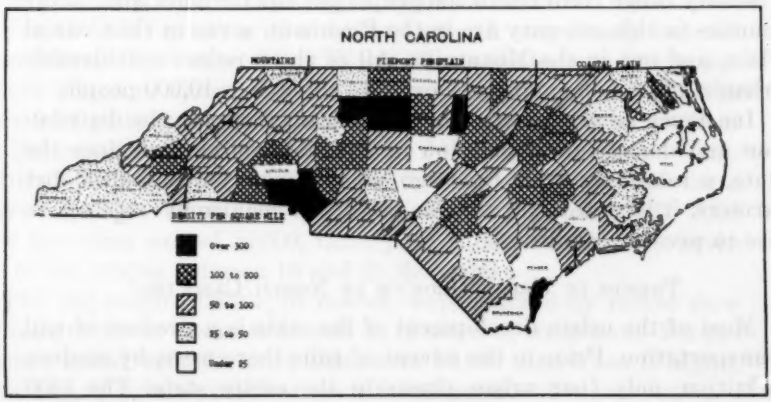

FIG. 1. Population density in North Carolina ranges from 10 per square mile in Dare County in the east to over 300 per square mile in a number of industrial counties, principally in the Piedmont.

we find average densities as follows: the Piedmont (111.8 per square mile), the Coastal Plain (62.9), and the Mountains (59.4).

All of the areas of low density are rural which generally, but not always, means rural farm. The chief exception to this rule lies in the tidewater region, where swamp and marsh land permit limited agricultural development under present conditions.

It appears that the greater density of population in the Piedmont reflects the urbanization of the region. The region, with about 42 per cent of the people living in towns of 2,500 or more, is about twice as urbanized as the remainder of the state. The mountain counties

[1] Data from 1950 United States Census of Population.

are only 20 per cent urban, while the coastal counties average about 23 per cent. Nearly 63 per cent of the urban population of North Carolina live in the Piedmont.

Since the Piedmont region contains appreciably more than half of the people on considerably less than half of the land, a close analysis of the population density map (Fig. 1) is desirable. Of the six counties in the state with more than 300 people per square mile, five are in the Piedmont, the sixth being the small coastal county of New Hanover, which contains the port city of Wilmington.

After these six counties the decline is rather sharp, dropping to less than 200 people per square mile. The state has 17 counties with a density range from 100 to 200 people per square mile. Nine of the counties in this category are in the Piedmont, seven in the Coastal Plain, and one in the Mountains. All of these reflect considerable urbanization, each having one or more cities over 10,000 people.

Inasmuch as urbanization is a significant factor in the distribution and density of population in North Carolina and since the state, a relatively short time ago, was primarily a region of dirt farmers, it is well to turn to the historical geography which gave rise to present conditions.

Trends in Urban Growth in North Carolina[2]

Most of the urban development of the state is a product of rail transportation. Prior to the advent of rails there were, by modern definition, only four urban places in the entire state. The 1850 census reported them as follows: Wilmington, 7,264; New Bern, 4,681; Fayetteville, 4,646; and Raleigh, 4,518. Raleigh was then, as now, Capitol of the State. Obviously, each of the other three centers owed its importance to water transportation.

Altho the railroads which did most to orient the urban pattern of the state were built between 1850 and the Civil War, the pattern of urban development was slow in its consummation. This, in part, may be attributed to the war and reconstruction. About a quarter of a century passed after the first rails were laid before any Piedmont Center became a full-fledged city of 10,000 or more people.

The beginnings of urbanization had their inception with the state's "industrial revolution," which began about 1880. It was about this time that cotton textile mills began to multiply, tobacco

[2] The data used in this section were compiled from United States Census reports on Population from 1850 to 1950.

factories to grow and furniture factories to appear. At the beginning of this period Wilmington, with 13,486 people, was the only city. Raleigh, Charlotte, and New Bern had populations between five and ten thousand. Only five other centers had reached "urban place" status of more than 2,500 people.

By 1890 the impact of the "industrial revolution" was being felt. Wilmington had grown to 20,056, and four other centers—Raleigh (12,678), Charlotte (11,557), Winston-Salem (10,725), and Asheville (10,235)—had reached city status. There were two places between nine and ten thousand, and ten between 2,500 and 5,000. The 1880's, opening with nine urban places and closing with seventeen, was truly a period of awakening in the state.

For the next quarter of a century growth was steady but not phenomenal. Then came First World War and the post war boom. North Carolina along with the nation really began to leave the farm and go to town. By 1920 the state had three cities in the 25 to 50 thousand class and eleven cities in the 10 to 15 thousand class. Thirty places had reached five to ten thousand status and 28 others were urban places of over 2,500. The decade beginning with 1920 saw five cities exceed 50,000, three pass 25,000, and thirteen move up to city status between 10 and 25 thousand.

The Depression 1930's, of course, were marked by rather slow urban growth in the state as well as in much of the nation. Yet the decade ended with six more cities over 10,000 than when it began. One city, Charlotte, reached the 100,000 class.

The War Boom 1940's produced some rather strange results in North Carolina's urban growth. All of the cities grew; a few doubling in size, but only four towns grew up to the city status of 10,000 or more. Yet there was pronounced growth in the smaller places. This comparison may be of interest: During the 1930's when six towns became cities, the number of towns from 2,500 to 10,000 grew from 47 to 50, an increase of only three, but during the forties with just four towns becoming cities, smaller urban places increased by 23 reaching a total of 70. Moreover, the growth of small places from 1,000 to 2,500 was phenomenal, increasing from 96 in 1940 to 136 in 1950.

The facts cited above give ample proof that the seventy years of industrial development from 1880 to 1950 brought profound changes in the population structure of North Carolina. The most pronounced changes were in the Piedmont, a region starting without a single

city and ending with 63 per cent of the urban population of the state and 21 of the 31 cities. Of the remaining ten cities, nine are in the coastal plain and only one in the mountains.

That there was and is a pattern to the state's urban growth is shown by the population map in Fig. 2. Much of this pattern was determined by the early railroads, particularly those built by the state of which there were three, each designed to becoming a connecting link in an east-west railroad system. The first and most important link followed a circuitous route from Goldsboro to Charlotte for reasons elsewhere described by this writer.[3] Soon after its

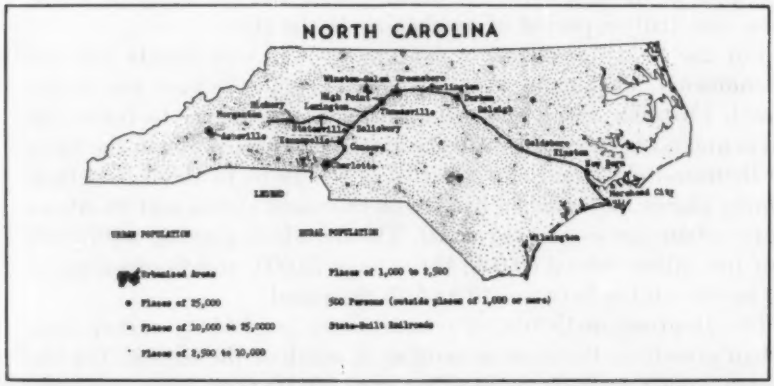

Fig. 2. Urban development in the state has been strongly influenced by rail transportation. The initial pattern was largely determined by a west-east alignment of State-Built Railroads.

completion, a second road extended the system from Goldsboro to the coast at Morehead City. Due to the Civil War, the third link, designed to lead westward from Salisbury to beyond Asheville, was interrupted as it approached the present town of Morganton.

Tho the mileage of these three state railroads represented only a small fraction of the total railroad mileage eventually constructed in North Carolina, the impact on urban growth was enormous. Soon towns were spaced along the state system at intervals convenient for horse and buggy trade. Having the advantage of an early start, these towns were generally the first to become cities.

[3] Coy T. Phillips, "North Carolina's Rich Crescent." Journal of Geography, Vol. LIV (April, 1955), p. 182.

Today 16 of the total 31 cities are located on these original rail lines; most of them are in the Piedmont.

Altho there were physiographic circumstances which conditioned the location of the state-built railroads, none was powerful enough to foreordain the growth of a metropolis. No combination of relief features compelled transportation lines to focus on a particular point providing the setting for the great industrial conglomeration common to industrial regions elsewhere in the world. Except for the mountainous west and the tidewater east, railroads and highways could be built with relative ease almost anywhere. Why, then, did the Piedmont region attract most of the urban centers and provide the main seat for industrial power, and why were the centers so widely disbursed over the region?

The state railroad system, of course, was well located in respect to the raw materials, which provided the resource base on which North Carolina's industrial system was later to develop. These words quoted from *North Carolina's Rich Crescent* seem appropriate.[4] The system "roughly paralleled the northern edge of the Cotton Belt, touched the Bright Tobacco Belt in the Piedmont of North Carolina and Virginia, and penetrated the Coastal Plain where the New Bright Tobacco Belt was soon to develop. Moreover it bisected the hardwood forest of the Piedmont Region. Thus the towns that grew up along the railroads were in a favorable position to play a pioneering role in the development of the state's three major industries: cigarette manufacturing, cotton textile, and wood furniture."

Among the assets of the Piedmont two others of great importance, man power and water power, were largely unused prior to the advent of the "industrial revolution." In 1880 the countryside was filled with people living mainly as subsistence farmers with low earning power and millions of potential kilowatt hours flowed unused to the sea.

To an appreciable degree the spacing of industrial centers was determined by these two factors. Industrialization was mainly a home grown product. Someone or a group of people established, near a stream, a cotton mill, a furniture plant, or a tobacco factory in a village or in the country. A town grew and when well located it became a city. Textile mills were widely distributed over the

[4] Ibid., p. 184.

central portion of the state. However, care was taken not to overcrowd the power resources or the labor market.

Rural Non-Farm Trends

Coincident with urbanization in North Carolina there has been the rise of a large, rural, non-farm population. "City living" in the open countryside, which got a significant start after the First World War, built up to a conspicuous trend in the 1940's.[5] Altho this is a national trend, relatively few states have a higher ratio of rural non-farm population than North Carolina. About one third of the people of the state are classified in the group.

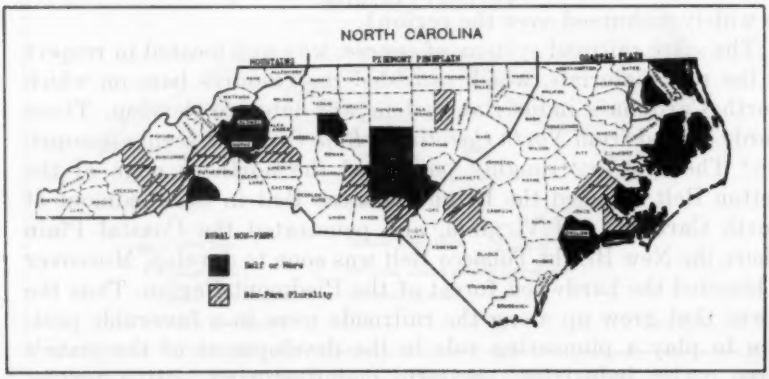

Fig. 3. Rural non-farm population is particularly heavy in the Piedmont. Certain urban counties also have heavy rural non-farm population. Most of the coastal counties are thinly populated.

The majority of the rural non-farm people live in the same region as the urban and for many of the same reasons. More than half of them (52 per cent) are in the Piedmont, where they constitute 31 per cent of the total population. The map in Fig. 3 shows the counties which are predominantly rural non-farm. It is somewhat deceptive, for it shows nine Coastal Plain counties with more than half of the people classed as rural non-farm and only seven such counties in the Piedmont.

This is understandable if we remember that the Piedmont, tho leading in rural non-farm population, has a still higher urban

[5] Rural non-farm population in the state increased 53.6 per cent from 1940 to 1950. Data from 1950 United States Census of Population.

ratio as well as a greater overall density. Indeed, if all the urban people were removed from the Piedmont it would have a greater density (64.9 per cent) than either of the other regions. Moreover, the nine Coastal Plain counties mentioned above are all in the Tidewater region where a relatively thin population is supported mainly by tourism, fishing, lumbering, and military bases. One additional illustration may help. The combined population of two rural non-farm Piedmont counties, Burke and Caldwell, is more than 80 per cent of the total of the nine Coastal counties. If it were not for the recent influx of people into Onslow county, the population of these two counties would exceed this area.

Rural non-farm growth has been primarily a by-product of the state's "industrial revolution." This "revolution" provided the means which made it possible for many people to find productive employment without giving up the advantage of country life and without migrating great distances from the place of their birth.[6] This was possible only after the advent of the motor car and the building of a web of highways across the state. Along with these came rural electrification and a state supported consolidated school system. Thus large numbers of people can live in the country and have most of the conveniences of the city. Thousands of these people are daily commuters to neighboring towns and cities while other thousands find employment in industrial plants located in the dozens of villages sprinkled over the countryside.

Rural Farms

In spite of urban and rural non-farm developments, North Carolina remains a state with a marked rural atmosphere. Because there are no really congested areas, farming as a way of life can be found by a few minutes drive from any city. Indeed it is the dominant activity for much of the landscape in all parts of the state except in the low, tidewater country.

In general, however, two separate parts of the state (Fig. 4) stand out as being predominantly rural farm. Most of the mountain people live on farms. Many, but not all, families on hilly lands operate on a semi-subsistence basis, producing little to sell and, of course, buying few worldly goods.

In contrast to mountain farming a more commercial type of

[6] This statement is based on personal observations made by the author whose entire life has been spent in the region.

agriculture operates farther east. This type of farming is especially well developed in the upper coastal plain where cotton, tobacco, and truck crops predominate. It is also evident in the Old Bright Tobacco Belt in the northern Piedmont and in the southern Piedmont counties with cotton as a chief crop.

Negro Population

Negroes constitute slightly less than 25 per cent of the total population of North Carolina, a proportion that grows steadily less decade by decade. The ratio ranges from less than 1 per cent

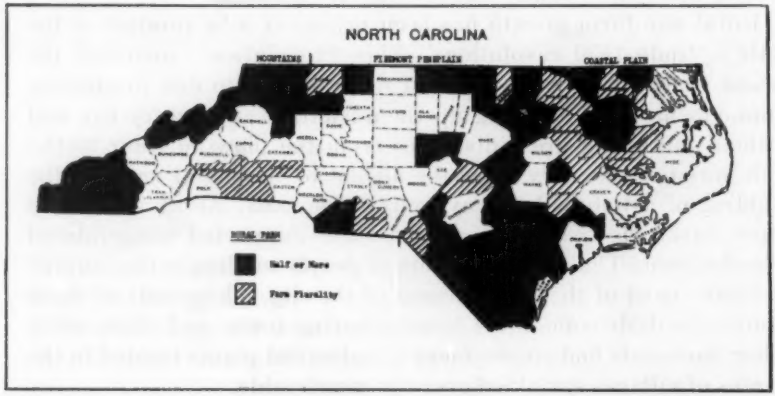

Fig. 4. Most of the Mountain countries and the better drained Coastal Plains counties are rural farm.

in the mountain county of Madison to 66.4 per cent in Warren County in the east-north-central part of the state.

The map in Fig. 5 shows most of the Negro population to be in the eastern half of the state, thus reflecting the influence of the early slave holding plantations. At the time of the first census in 1790 relatively few negroes lived west of the Coastal Plain. Since that time Negroes have penetrated parts of the Piedmont, but relatively few have gone to the mountain counties.

The most pronounced geographic and economic forces behind the westward immigration of the Negro are three in number. As cotton culture moved westward across the South, the southern part of the North Carolina Piedmont became incorporated in the Cotton Belt. In the northern Piedmont the Bright Tobacco Belt developed

in mid 19th century. Both of these were plantation products and, of course, attracted slaves. By 1860 Negroes made up half of the population in the northern tier of counties as far west as Cashwell, and they made up about one-third of the southern counties as far west as Gaston. The central Piedmont had then, as now, generally a much lower percentage of Negroes. More recently, however, another factor has entered into the picture. Great numbers of Negroes have gone to certain industrial centers where they find

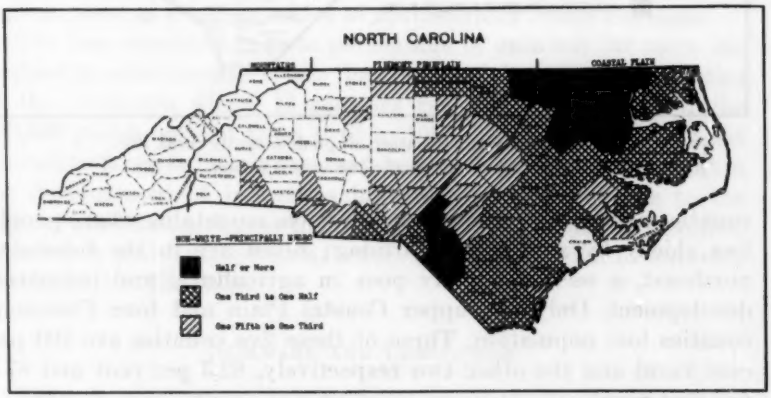

FIG. 5. Negro population is heavy in rural areas which specialize in such cash crops as tobacco, cotton, peanuts, and produce.

employment in tobacco factories,[7] in construction industries, as domestic servants, and other occupations requiring manual labor.

RECENT CHANGES IN POPULATION DISTRIBUTION

The decade of 1940-1950 was characterized by marked shifts in population in North Carolina with 22 counties losing population (Fig. 6) and 21 counties gaining at a rate above the national average of 14.5 per cent (Fig. 7).

Where did the loss take place and for what reasons? In general, the loss of population occurred in what may be termed rather backward, rural areas with limited employment opportunities in the form of industrial development. Only two out of the twenty-two counties that lost population had, in 1950, urban places of more than 2,500 people and none had a town of 5,000 people. Ten of the

[7] In 1930 Winston Salem was 43 per cent Negro and Durham 36 per cent.

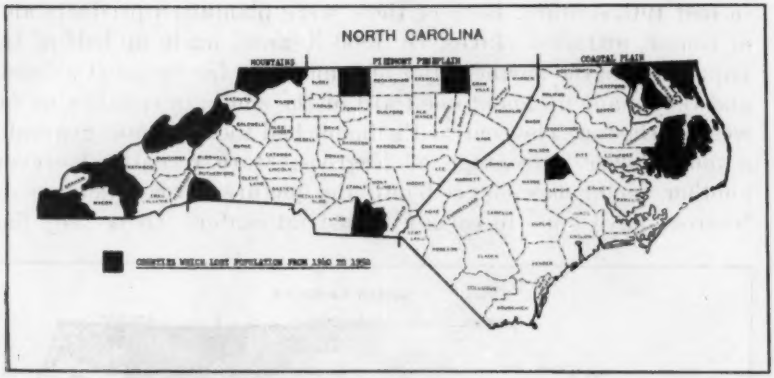

FIG. 6. Twenty-two counties, all predominantly rural, lost population in the last census period.

counties are in the relatively inaccessible mountains where people live chiefly by subsistence farming; seven are in the tidewater northeast, a section notably poor in agricultural and industrial development. Only one upper Coastal Plain and four Piedmont counties lost population. Three of these five counties are 100 per cent rural and the other two respectively, 82.3 per cent and 87.3 per cent rural.

The answers to where and why these people went reflect something of the character of the state. Some, of course, left the state for

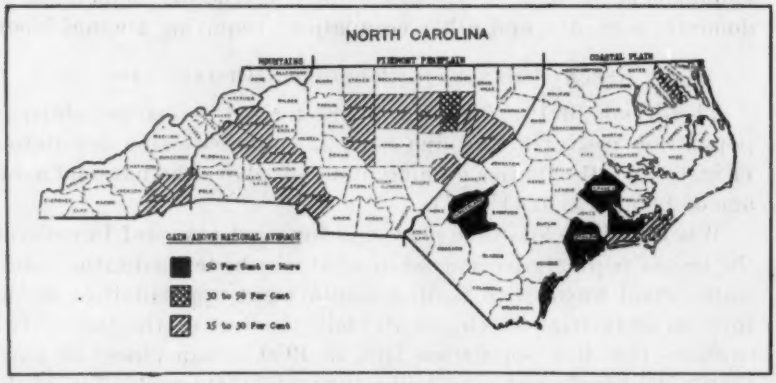

FIG. 7. The industrial counties of the Piedmont experienced the greatest numerical gain. War-time activities stimulated a high percentage of gains in some eastern counties.

large industrial centers in the North, but others were drawn to regions of rapid growth within the state. These regions fall mainly into two categories. The most marked gains were in three Coastal Plain counties, Cumberland, Craven, and Onslow. These counties contain respectively the military bases at Fort Bragg, Cherry Point and Camp Lejeune. The port of Wilmington in New Hanover county, slow growing in the recent decades, received a shot in the arm from increased war time shipping; and the inland port of Elizabeth City, with inter-coastal waterway connections in the tidewater region, grew as a region center of northeastern North Carolina.

Tho less conspicuous as to percentage of gain but far more important in actual numbers, was the growth of the industrial counties of the Piedmont where 13 counties received 48 per cent of the 490,306 people gained from 1940 to 1950. There the gain was not limited to large industrial centers, but much of it was incidental to the development of industries in rural areas giving rise to the rapid, rural non-farm growth noted earlier. Two mountain counties, Henderson and Transylvania, reflect recent expansion of industry in that part of the state.

SUMMARY AND CONCLUSION

There is much which is significant about the arrangement and distribution of population in North Carolina, for it is a situation which will undoubtedly attract the attention of the nation in the forthcoming, security-conscious age. No other state has its population so nearly equally divided between urban (33.7 per cent), rural farm (33.9) and rural non-farm (32.9 per cent). Like no other state, North Carolina has a proportionately large number of urban places and many moderate sized cities, yet it has no major metropolitan center dominating all or even a considerable part of the state economically or politically. Tho predominantly rural, only four states, Arkansas and Mississippi in the South and the Dakotas in the north central region, are less urban than North Carolina on a percentage basis. Only seven states exceed North Carolina in percentage of rural non-farm population. Of these, three are in the arid and semi-arid West, three in ice-scoured New England, and one, West Virginia, is in the much dissected Applachian Plateau. In each of these states, rural people have been forced into non-agricultural occupations because of rugged terrain or climatic re-

strictions. Both factors apply only to a limited degree in North Carolina.

It is reasonable to expect that rural farm population will continue to decline while the urban and rural non-farm will increase. If this is true, urban centers, especially those in the Piedmont, will hold their own by attracting more diversified industries which require greater managerial and labor skills. Rural non-farm growth, on the other hand, will tend to stimulate new industrial centers in areas that are now rural. These in turn will give rise to further urbanization.

CONSERVATION AND THE NATURE OF SOCIAL PROBLEMS: A PROPOSED SHIFT IN EMPHASIS

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The following has for its subject a discussion of the nature of social problems with particular emphasis on the problem of conservation.[1] In the beginning it will be assumed that conservation is a legitimate concern of geographers. The fact that the textbooks in the field are largely written by geographers would seem to bear out this assumption. In the opinion of this writer, however, the textbook discussions of conservation problems and perhaps the teaching of conservation, as a result, need a change in emphasis.

In a typical textbook, a resource such as soils is traditionally treated in the following fashion: the various major soil groups are described; the past mis-use of soils and the result of such mis-use are recounted in dramatic fashion; and recommendations for the wise use of soils in the future are listed and discussed. This and the similar treatments of other resources seem to be based on the somewhat unrealistic assumption that if knowledge of wise conservation practices is made known, this knowledge will automatically be put into practice. Little emphasis, none at all at times, is given to the discussion of conservation problems as social problems—that is problems of social policy, problems of action, problems of instru-

[1] This article is based in large part upon a paper of the same title read before the April, 1954 annual meeting of the Southwestern Social Science Association in Dallas, Texas.

mentation which necessarilly involve a discussion of social conditions and those values basic to a liberal democratic society. If a given resource is being mis-used or if it is not being used adequately in terms of its known potential, how do we go about getting things changed? Very often we know the changes that must take place in the physical use of a resource, but very often these physical changes cannot be instituted unless changes are also made in the social order. The "how" cannot be answered until we understand the nature of social problems in general.

A sociologist, Louis Wirth, has defined a practical social problem as being a "situation in which there is either (a) a conflict of values, a failure to realize values agreed upon, or a threat to existing values; or (b) disagreement on the instrumentation of ends."[2]

This definition requires for the sake of clarity a general statement of those values alluded to above in connection with which problems arise. Mr. Wirth has provided us with a statement of these values adequate for the purposes of this discussion.[3] They are as follows:

1. Material well-being of the entire population including: (a) physical health, (b) adequate supply of material goods or services.
2. Psychic security.
3. Opportunity to compete for the possession of necessarily scarce economic and social rewards on the basis of competence alone.
4. Individual opportunity to participate in the determination of policies and measures affecting him.
5. Final responsibility of elected and appointed officials to the people.
6. The maintenance of civil rights, including freedom of: (a) speech, (b) press and publication, (c) association, (d) worship.
7. Opportunity for personal self-development enabling each individual to realize those of his potentialities which are not socially undesirable including freedom of: (a) occupational choice, (b) consumption choice."

It takes only a moment or two of reflection to see the relationship between the wise use of resources and the realization of these

[2] Louis Wirth, ed., *Contemporary Social Problems*, University of Chicago Press, Chicago, 1940, p. 5.

[3] *Ibid.*

values. It is certain that the realization, partially or completely, of many of these values has depended upon and will depend upon our ability to maintain and improve upon the first of these—the material well being of the entire population. Further, it is certain that this cannot be done unless our resources are used wisely: "Situations which diverge from, undermine, or block the realization of these values constitute social problems,"[4] and it is obvious that the mis-use of resources constitute such situations, otherwise how do we explain the mis-use of our resources by people who know how to use them properly? It seems clear that geographers must give attention to the relationships between conservation and the realization of such values, and further between existing values and attitudes and the solution of conservation problems.

From the foregoing it becomes clear that social problems arise out of attitudes. This suggests the need for distinguishing between the objective and the subjective aspects of social problems or in particular conservation problems. This distinction can be made clear by considering for a moment the dust bowl of the 1930's.[5] Objectively, the problem was symbolized by conditions which could be observed, counted, and measured in some fashion. These objective conditions evoked attitudes which caused people to take the view something should be done about the conditions.

Objectively, that is thru observation and measurement, it was possible to come to some definite conclusions. Millions of acres of land were made useless even if only temporarily in some areas. Thousands of farmers were forced to move elsewhere. Millions of dollars in property ceased to have value. Now these facts and others of the same order needn't necessarily be of any importance unless people felt that such conditions shouldn't exist. Subjectively, however, many took the view that something should be done about these conditions; but these same people looked upon the same problem from different frames of reference—that is, different people considered the above conditions as constituting a problem but for very different reasons. The banker holding a mortgage on the land considered it a problem because his mortgage was as valueless as

[4] *Ibid.*

[5] The discussion of the subjective and objective aspects of social problems is based on an unpublished paper, *Some Notes on the Nature of Social Problems* by Earl S. Johnson, University of Chicago. Dr. Johnson used the housing problem for illustrative purposes.

the land. State officials, undoubtedly, considered the dust bowl as a problem because the state was losing citizens and tax monies. The states to which the farmers moved might have considered it a problem because they knew not what to do with the migrating down-and-out farmers. Relief officials, social workers, agricultural experts; all looked upon these conditions as constituting a problem but for different reasons.

A sociologist, Earl S. Johnson, wrote of this phenomenon: "It is sure that unless the interest or values of some group of persons is threatened there is no such thing as a social problem."[6] The fact that such a problem as the dust bowl meant so many things to so many different kinds of people indicates the necessity for considering the kinds of people involved. It is possible that people with such different interests and value systems as mortgage bankers, state officials, farmers, relief officials, geographers and social workers could get together thru collective action to meet the problems arising out of the dust bowl, perhaps even take the steps necessary to prevent the re-occurence of another dust bowl. The atmosphere on occasion in recent months testifies to the fact that dust bowls are not a thing of the past.

"This brings us to the heart of the problem of (conservation) problems, the problem of social action—getting people to act collectively to do something about it."[7] The study of the political process then becomes tremendously important; how do men come to consent, agree, and act together with respect to a problem? The solution of problems by the people using the results of scientific investigation is more in keeping with the social goals of a democracy than the authoritarian scientific solution of problems by scientific experts. The former requires that people not only be aware of conservation problems, but that they be aware of the political process involved in their solution as well. Unfortunately, typical textbooks on conservation are strangely silent on this all important phase of the problem.

But this is not all that is required for the study of conservation problems for we must also study the causes of two things: (a) the attitudes, and (b) the objective conditions. The study of attitudes is more properly the province of the social psychologist and it is

[6] *Ibid.*
[7] *Ibid.*

not suggested that geographers should become experts in this area. Nevertheless, it seems evident that we cannot ignore the role that attitudes play in creating and perpetuating conservation problems. Further, whatever will be done with the facts arising out of our studies will depend on the attitude motivation of people—for in a democracy it will be the people themselves or their elected representatives who will create the new institutions and the new social climate by which and in which the unwise use of resources will be made less possible.

It is not enough to discuss cures for a sick land, we must consider preventative medicine. And here it is necessary to discuss the nature and problems of democratic planning. It is certain that the peoples of the world will strive to solve their problems. The question is will these attempts be democratic or will they be authoritarian? The decision, in part, lies in the hands of conservationists and in a more realistic approach to the problems of conservation. The better informed the public is about the nature of conservation problems, including their social as well as their physical aspects, the more likely it is that the attempts at solution will be democratic attempts.

Perhaps another illustration of the complexities of conservation problems would be of value at this point. Lawrence K. Frank, in discussing the character of social problems invoked "that familiar figure of the man from Mars who views mundane affairs with an innocent eye."[8] Let us invoke this inquisitive visitor again and discuss with him the problem of soil erosion. As we discussed this problem, our visitor would undoubtedly ask numerous questions: Didn't we know how to maintain soil on the land? Were there not farming practices and methods of land utilization which would insure that our soils could be maintained indefinitely? The answer in large part would have to be "yes," for we do in large measure know how the land should be treated and used.

Obviously our visitor would then be confused and perplexed as to what the exact nature of our problem was. And here we would have to discuss and attempt to explain our system of private pro-

[8] Lawrence K. Frank, "The Character of Social Problems," *American Journal of Sociology*, Vol. 30 (1924-25), p. 462. Printed in *Social Problems in America*, A. M. Lee, and E. B. Lee, ed., New York, 1946, p. 6. Dr. Frank invoked the man from Mars in his discussion of the housing problem and his example serves as the framework for the discussion of soils which follows in this paper.

perty, the price system, popular government, race relations, absentee ownership of land, tenant farming, share-cropping, and so on. After all these and other explanations, showing that to get wise conservation practices in force we must not infringe upon anyone's rights of private property or freedom to make a profit, and that what we want is to find a way to accomplish our ends without interfering with anyone's customary ways of doing things, our visitor might remark: "You know, this is very interesting, do you have any other such different problems?"

We would in turn perhaps describe our forestry problems or fisheries problems to him. Our visitor might interrupt finally and say: "It appears to me that every problem you describe has the same characteristics as every other problem—that is, you would like to avoid the consequences of your present established laws, institutions, and practices without changing those established laws, institutions, and practices. You are like the monkey who was trapped by a bottle containing sweets. The monkey, of course, desired to get his hand free, but at the same time he wouldn't let go of the sweets in order to get his hand free."

The above is by way of pointing out that the study of conservation problems involves more than the study of the resources in question and the physical changes which are necessary in their use if the resources are to be used wisely. It involves, also, the objective study of the social factors which condition resource use. For change must also take place in the area of social relationships and economic conditions, if the physical conservation practices we advocate are to become the rule.

CONCLUSIONS

No attempt has been made here to offer any solutions to conservation problems, but, rather, an attempt has been made to point up more clearly some of the characteristics of social problems and, therefore, of conservation problems in particular. For the more effective treatment of conservation it would appear, therefore, that more emphasis should be given to the following:

1. The relationship between conservation and the implementation of social values.

2. The general character of social problems and the application of this knowledge to the specific treatment of conservation problems.

3. The study of the causes of both the objective and subjective aspects of conservation problems.

4. The study of attitudes.

5. The study of the political process with regard to solving conservation problems.

6. The study of the problems of democratic planning with respect to conservation.

7. The objective study of those established laws, institutions, and social practices; the consequences of which, conservationwise, we are trying to avoid.

AN APPROACH TO FIELD EXPERIENCE IN EIGHTH GRADE GEOGRAPHY

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Central School, Elbridge, New York

Some twenty-five years ago L. Dudley Stamp commenced the field work for the great Land Utilization Survey of Great Britain. In this field work was incorporated the assistance of about 250,000 school children who actually mapped land-use on prepared base maps. Encouraged by the usefulness and eagerness of the school children he later suggested that mapping of land-use might be an excellent means of engaging both school and college students in actual field work.*

Altho the study of land utilization was particularly adaptable to Great Britain, with its many small fields and diversified crops, Stamp saw the possibility of applying the technique to American education as well. This was interpreted as an encouraging recommendation to take the study of maps out of the classroom where it has so often been lost. The only question was whether to restrict the field work to land-use mapping.

The physical settings and cultural patterns of America make several difficulties obvious. In the East the United States lacks the well defined field patterns of England. Thus the absence of field boundaries on existing maps hinders the student who would like to

* L. Dudley Stamp, "Land Utilisation Survey as a School and College Exercise." JOURNAL OF GEOGRAPHY, April, 1934.

map agricultural features. In the West the township and range system renders mapping easy, but the field units are so large that it is difficult for the young student to visualize the extent of the area before him. In almost all cases American distances are too great to permit individual school children to work on foot.

The site afforded in this case was in a prominently glaciated section of central New York State. Base map coverage was available from U.S.G.S. topographic maps but not in such detail that untrained students would be able to plot land-use data on them. Keeping in mind that the original goal was field experience, it was decided to present the students with an equally observable phenomenon, evidence of glaciation.

The subject itself might seem beyond the comprehension of eighth grade students, but a discussion of the matter in a science class showed that they were able to grasp the glacial concept, and to relate some of the local topography to it. Accordingly a unit was undertaken in this class developing the behavior of glaciers and the effect of the ice age on the local area.

The unit culminated in the planning of a field trip to look for "clues to the glacier." The students were told that if they would decide on a method of representing these clues graphically a base map would be prepared. They were to be permitted to take this base map on the field trip and to map what they found. Not without difficulty the group listed the clues that they might expect to observe and agreed on symbols that might represent them. This was a painful operation but the group eventually agreed upon a long list of anticipated phenomena each of which was represented by a symbol.

Since the class was not departmentalized, but remained in the same room with the same teacher all day, it was relatively easy to support the project with many separate subject areas. Social Studies, therefore, was utilized to point out the necessity of maps and the use of symbols in making them expressive. Mathematics was of prime importance in making and using the scale of the base maps.

The base detail was abstracted from U.S.G.S. maps and duplicated on $8\frac{1}{2} \times 11$ inch paper. This was deemed important for several reasons. Each student should have his own base on which to map, otherwise the whole purpose of the project is defeated.

The duplication process is cheap, may be carried out in most modern schools, and eliminates the necessity of purchasing printed maps. By doing this many extra base sheets may be run off making it possible to use the actual base map for classroom experimentation prior to the trip. Moreover much of the unnecessary cultural data which might confuse the young student may be eliminated leaving only the desired control data.

In this case the control was to be the local highway pattern. County and state highways lattice the entire area and afford an excellent opportunity to observe all of it. They also provide prominent landmarks to which physical phenomena might be related. In additon to the roads an occasional house, cemetery or other cultural feature was added to indicate needed reference points.

The day prior to the trip students prepared their individual kits. Each was to consist of a base map, a list of symbols, a straight edge and a drawing surface. In most instances the latter was a notebook or other writing surface ordinarily possessed by the student. Individual students offered to bring hammers, specimen bags, compasses and other helpful but not indispensable items. Permission to wear old clothing to school was readily granted by the administration. At no time was there a demand made on the student to buy something he did not normally possess.

The transportation was provided by the school which normally has several large school busses idle during class hours. The route had been planned by the teacher and driver in order to allow for practical driving requirements and to make the optimum use of the time available. The highway pattern allowed a series of North-South traverses, each of which partially overlapped the other.

During each traverse the bus stopped at every hilltop and the students considered the nearby landscape. Group discussion usually ended with a common agreement as to whether the local formation was glacial. However, the individual mapped his own impressions and no attempt was made to come to agreement on questionable items.

Tho the students had agreed on a list of symbols for their anticipated phenomena they found that in the field they had to face two further problems which had been less obvious to them in the school room. First, they found it necessary to locate the exact position of the bus at each stop. This had been anticipated somewhat and one boy sat near the driver keeping an odometer log. At each stop he

computed the distance from the last landmark shown on the base-map.

Secondly they were puzzled as to the size of the symbols which were to appear on their maps. In some cases there was obviously no relationship between the size of the feature and the size of the symbol. However, with some features, and particularly drumlins the symbol could be scaled to better represent the nature of the topography. The most skillful of the students attempted to judge the length of drumlins and to symbolize it on their base maps.

The use of out of the way highways and a school-owned bus afforded a great deal of flexibility to the trip. The students could and did stop and dismount nearly at will. Nearby drumlins were climbed and explored. Kettleholes were entered to insure that there was really no outside drainage and that they were not the result of human excavation.

Upon returning to school the combined efforts of the class were represented on a large representation of the working base maps. Here it was necessary for the students to arrive at decisions concerning questionable interpretations. Perhaps this was the most valuable experience of the whole project for it demonstrated that the map symbol is man-made and subject to interpretation and compromise.

To the class the result of the enterprise was a large map of the field trip showing about nine square miles around their school. On it were shown the gravel pits, swamps, kettleholes, and a preponderance of drumlins which they had seen. The latter, by their noticeable pattern, clearly demonstrated the apparent direction of the ice sheet.

To the teacher the trip was evidence of the ease with which American public school teachers may use their local situation and facilities to teach geography with a field method. The limited experience shown here could be duplicated, with some modifications, in nearly any part of the United States where there is access to a rural area. With sufficient imagination and initiative a field method can be incorporated into nearly any American junior-senior high school curriculum.

GEOGRAPHICAL PUBLICATIONS

James E. Collier. **Agricultural Atlas of Missouri.** Agricultural Experiment Station, College of Agriculture, University of Missouri, Columbia, 1955. 75 pages with 88 maps and index. $1.00.

The materials for this four-color atlas were assembled by the Chairman of the Department of Geography in close cooperation by staff members of the College of Agriculture. Altho several previously published maps have been included, the author has done a splendid piece of cartographic work in the creation of many original and attractive maps.

The maps are grouped as follows: Missouri—The State and Its People; Forests, Soils, and Climate; The Use of Land; Types, Size, and Number of Farms; Distribution of Crops; Distribution of Livestock; Agricultural Values; and Selected Agricultural Industries. Thru a planned sequence of maps, each group of maps telling its part of a story as the chapters of a book, the author shows the nature of the natural resources that provide the bases for agriculture; reveals the diverse types of agriculture that have been evolved; and notes the flow of farm products to the factories of urban centers.

From the standpoint of comprehensiveness, organization, and pleasing appearance, the Atlas should provide guidance for the compilation of materials for atlases of other states. As a reference handbook, the Atlas will serve a useful purpose in schools, offices, and homes.

Mendel E. Branom

Harris Teachers College

Frank Illingworth. **Highway to the North.** Philosophical Library, New York. 1955. xiv and 290 pages with illustrations and index. $7.50.

Perhaps none of the military roads of World War II had more appeal to the American public than did the Burma Road of China and the Alaska (Alcan) Highway into our great northern territory. Illingworth has written an "and then what happened" account of the influence of the oft-improved Alaska Highway upon the economic development of Alaska and northwestern Canada.

The author has employed a unique approach: a presentation of the views of an Englishman, hitchhiking over the Alaska Highway at the end of the winter season. He apparently had a background of previous residence and travel in arctic lands, plus the finances to pay bus fare or even to fly, when necessary.

The manuscript does not adapt the technique of the professionally trained geographer. And the graduate student in geography will not find much that would be valuable as source material in preparation of a research paper.

The particular merit of *Highway to the North* would appear to be for recreational reading by high school students and adults. It affords glimpses of individuals among the peoples, Indians, Eskimos, 98ers, sourdoughs, and late arrivals, who constitute the population of northwestern North America. The book suggests the uses to which the Alaska Highway is now being put by the tourist, the trucker, and the commercial traveler. There is some sequence to the account, altho it rambles considerably, with attempts at town description and even an unsuccessful grizzly bear hunt. The rambling is well demonstrated by the chapter subheadings in the table of contents. The photographs, especially those of people, add interest. The single fold-out map in the rear fly, altho cartographically weak, does provide place-name reference. The reviewer enjoyed *Highway to the North*, but did not find that it held his attention continuously.

David W. Lantis

Compton College

Earl B. Shaw. **World Economic Geography,** John Wiley & Sons, New York, 1955. vii and 582 pages with illustrations, maps, references and index. $6.50.

Professor Shaw has drawn on several years of teaching experience to provide a new and different textbook for introductory college courses in economic geography. The student is introduced to the field of economic geography and its several approaches by definitions and examples. Four approaches to the subject are illustrated by means of chapters on the economic geography of rubber, a commodity approach; of Guatemala, a regional approach; of commercial corn-mixed farming, an activity approach; and of the exploitation of minerals, a principles approach. In subsequent chapters the author stresses principles as the major theme of the text. Part 2 consists of chapters on forests, domestic animals, and the fishing industry.

Climatic regions provide the framework for a survey of world agriculture in nine of the twenty chapters in the text. Climate is considered to be the most important factor influencing farm production, and this approach provides information on weather and climate as well as a better understanding of world regions and world geography. Only one or two agricultural commodities or activities are presented for each agricultural region (e.g., cacao in the tropical rainforest, and rice and cotton in the humid subtropics). In the agriculture of some types of climate, description of each of the regions of the type is given.

Chapters on manufacturing, trade, and population complete the book.

Numerous maps, graphs, and photographs from a variety of sources illustrate the text. Many teachers will welcome the study questions and the annotated bibliography with which the text can be supplemented.

JAMES E. COLLIER

University of Missouri

Neville Scarfe. Student Participating Films entitled **Denmark I** (17 frames); **Denmark II** (21 frames); **Sweden I** (18 frames); **Sweden II** (24 frames); **Finland I** (20 frames); and **Finland II** (25 frames). Dukane Corporation, St. Charles, Illinois, 1955. Black and white, $30.00; color, $36.00.

This group of strip films with accompanying recording for narration is a new and very effective way for teaching geography. The text is well planned, the narration is good, and the pictures are well chosen and represent better than average photography. Maps in the films and suggestions in the narration for the use of others aid greatly in explaining not only the physical geography but land use as well. All films indicate the more extensive use of hand labor than in United States and in some cases show what appear to us to be old fashioned methods and types of equipment.

Denmark I. The introductory map shows outline of country and major cities. Good sequences follow on dairying, hog raising, poultry growing, and the processing and marketing of these goods. Harbor scenes indicate trade of animal products for fertilizer, fuel, and machinery.

Denmark II. Pictures of rural homes and dairy barns are followed by scenes showing harvesting of grain, hay, and sugar beets. Emphasis is on scarcity of land and the need for careful use. Pictures of city streets, urban homes, industrial plants, a chalk pit, and waterfront scenes with fishing boats, fish and vegetable markets follow. Film indicates lack of heavy industry except shipbuilding but the presence of small implement plants. Graphs comparing land use in Denmark with several European countries form a fitting close to the study of this country.

Sweden I. After an introductory map picturing amount and location of cultivated land, the film provides an explanation of the climate and indicates man's adaptation to it. It shows the harbor of Stockholm and the problems of winter ice, the cultivation and use of the best land with crop harvesting sequences, the handling of milk and the housing of animals as influenced by climate. Past and present dairy practices are compared.

Sweden II. A very good map indicating location of pulp mills and a forest activity sequence open this film. Shipbuilding, textile, iron, and leather manufacturing are pictured with harbor scenes and power facilities for such activities. Iron ore mining is illustrated and lack of coal is mentioned. The ice free port of Göteborg is shown.

Finland I. A map of forest locations introduces this film. The use of forest and water power resources are then illustrated followed by scenes and explanations of farming difficulties in rocky areas and cool climate. The use of canals as highways is pictured.

Finland II. This part of the film shows farm sequences of cropping and dairying. Trapping by Laps is pictured as are waterfront scenes with vegetable and fish markets. The film ends with a calendar marked to indicate the period during which outside work can take place in Finland as compared to Denmark.

There are disadvantages in the use of these films. Not all people who have strip film projectors also have record players available in which case a teacher must spend time learning or adapting the recorded text. Teachers must also have an assistant to help with victrola, strip film projector, wall maps, and the use of texts and atlases to make for continuity and effective study.

While the reviewer has not seen these films in color as those studied were in black and white, it would seem that if standard color film is used they would be many times more effective and well worth the price difference. These films can be used most successfully with narration in the upper grades and junior high. Individual frames as slides meet needs at higher levels.

If I were a teacher in the grades mentioned above I would appreciate greatly having this set of filmstrips.

LYDA BELTHUIS

University of Minnesota, Duluth

Heinrich Harrer. **Seven Years in Tibet.** E. B. Dutton and Co., Inc., New York, 1954. 314 pages, 40 pages photographs, 1 map. $5.00.

This book records the remarkable exploits of an Austrian mountain climber from an internment camp in India, across the desolate and rugged stretches of Himalayan country in northern India and southern Tibet, to the sacred city of Lhasa where he becomes the personal tutor to the religious ruler of the Tibetans, the Dalai Lama. Two sections will be of particular interest to geography teachers. First there is the description of the trek to Lhasa which the reader can follow with the aid of a wisely inserted physiographic diagram. The author is a keen observer and provides interesting accounts of topography and weather (for a time he carried his own thermometer), of contacts with friendly nomadic herders and of one narrow escape in bandit-infested country, across what must be one of the loneliest landscapes in the world. The night flight over endless stretches of snowy heights with temperatures below -30°F is one of the most memorable incidents in the book and attests to the remarkable powers of body and spirit that were needed for the twenty-one month journey to Lhasa. In the Forbidden City, we have the highlight of the book—the description of everyday life and customs in the Tibetan capital. Here are numerous details of religious ceremonies, public administration, family life, viewpoints, manners and morals. Here are the performances of different mediums, including the rainmaker and the State Oracle; the celebration of a birth in a noble family with

a dinner of more than forty courses; the lively bargaining at the great horse markets in the fall; and the Tibetans practicing their age-old pastime of kite flying. Finally, as the author becomes the confidant of the Dalai Lama, we get an intimate and tender portrait of the young boy who represents to all Tibetans the Incarnation of the Living Buddha.

R. LOUIS GENTILCORE

Indiana University

Fred E. Dohrs, Lawrence M. Sommers, and Donald R. Patterson. **Outside Readings in Geography.** Thomas Y. Crowell Company, New York, 1955. 805 pages. Student edition, $2.95.

A marvelously rich collection of readings designed for courses in introductory college geography, whether topical, world-regional, or political. The selections range from geographic philosophy through physical and cultural elements to regional and political themes; the authorship from the most theoretical of geographers to professional journalists. Some selections provide concrete examples and others are simply elaborations of the general ideas found in introductory texts. A truly pioneering work, a major resource for teaching, and all for the price of a ticket to a football game!

But this is no carefully selected plate lunch, with each item chosen for digestibility and its contribution to the balance of the whole: rather it is a richly laid table, with plain food and fancy, with more than any one person could digest. Some of the more theoretical passages are surely not suitable for the average student; the theory of regional geography seems hardly the place to begin topical geography; unevenness in difficulty and value are evident thruout the volume. But it does contain nearly a hundred selections and it is a big book. The task of selection is the teacher's obligation.

This book provides, for the first time, a practical solution to the problem of supplementary readings for large introductory classes in geography. Like Charles Colby's *Source Book for the Economic Geography of North America* (1921), this volume contains many passages which will surely cause students to say to themselves, "Ah, so that is how geographers think and work. I want some more of that."

J. RUSSELL WHITAKER

George Peabody College for Teachers

Bud Helmericks. **Arctic Hunter.** Little, Brown and Company, Boston, 1955. 142 pages with illustrations. $3.00.

Bud and Connie Helmericks have travelled thru many parts of Alaska and have written stories for all ages. His latest book is meant for boys of about 12-14 years. It tells the story of an Eskimo boy from Point Barrow, and describes his life as a seal hunter along the northern Alaska coast. Excellent diagrams and line sketches of hunting implements and methods give clarity to the descriptions. Helmericks uses the story and pictures to teach a great deal about the hunting life of the Alaskan Eskimos. These people are changing rapidly as continuous contact with white man is causing new social and economic adjustments, and one can feel some sense of this change in the background of the stories. The language is simple, and the chapters have a suspense which will keep the young reader of "adventure" stories interested. Teachers in particular will find the diagrams useful for explaining hunting methods in a unit on the Eskimos.

J. LEWIS ROBINSON

University of British Columbia

EDITORIAL NOTES AND NEWS

The Association of American Geographers has arranged low cost direct transportation to the Rio de Janeiro meeting of the International Geographical Union. For details address, Foreign Services Corporation, 1624 Eye Street, Washington 6, D.C.

DR. NEVILLE SCARFE becomes Dean of the College of Education, University of British Columbia, and will assume his duties July 1. The College of Education is a new addition to the University and has been established thru the cooperation of the Education Department of the Provincial Government, the University, the Teachers Federation, and the School Trustees' Association.

A gas-distillate well has been completed 40 miles off the coast of St. Mary Parish, Louisiana. The depth is 14,800 feet and was drilled in 85 feet of water.

For the purpose of teaching the seasonal circle of illumination on the Earth's surface, a simple hemispheric shell may be constructed of papier-mache. The papier-mache can be molded on a plastic globe and permitted to dry. Then it may be sanded or otherwise smoothed and painted white. In class, the shell is held by hand against the globe and is slid north or south to illustrate the apparent migration of the sun and its circle of illumination.

GEOGRAPHY IN THE HIGH SCHOOL

In 1950 the National Council of Geography Teachers appointed a committee to make a survey of the status of geography in the secondary schools. Questionnaires were sent to 25 per cent of the high schools in each state. It was thought that this number would give an adequate picture of geographic education in the high schools of the country. Full details of the study appear in the report which is now in press. The following are a few highlights discussed in the report.

1. Geography is taught as a natural science in 23 per cent of the schools.
2. Two-thirds of the school staff and those who teach geography favor offering it as a separate subject.
3. Increased interest in geography was reported by 58 per cent.
4. Major problems confronting expansion of geography offerings are: overcrowded curriculum; need for qualified teachers; better textbooks; improved background at pre-high school levels; more understanding administrators; and wider acceptance of geography for college entrance.

The full report should be ready in September, 1956. The price will be announced as soon as it has been determined.

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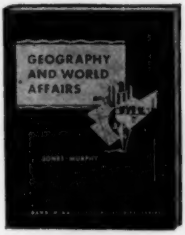

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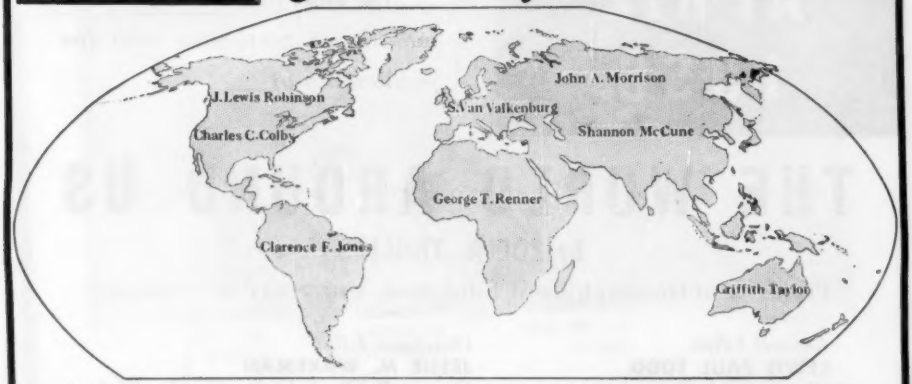

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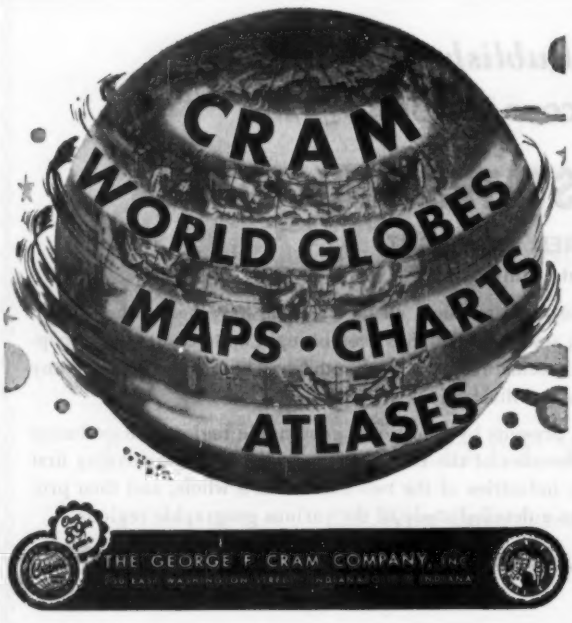

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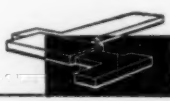

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